

WHAT IS CLAIMED IS:

1. A heater chip for an inkjet printhead, comprising:
  - a substrate;
  - 5 a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
  - a conductor layer on the resistor layer defining a heater length; and
  - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein
  - 10 the heater length multiplied by the heater width is in a range from about 50 to about 100 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.
2. A heater chip for an inkjet printhead, comprising:
  - 15 a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
  - a conductor layer on the resistor layer defining a heater length; and
  - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein
  - 20 the heater length multiplied by the heater width is in a range from about 100 to about 150 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.
- 25 3. A heater chip for an inkjet printhead, comprising:
  - a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and  
an overcoat layer having an overcoat thickness on the resistor layer, the  
overcoat thickness and the resistor thickness defining a heater thickness wherein  
the heater length multiplied by the heater width is in a range from about 150 to  
5 about 200 micrometers squared and the heater thickness is in a range from about  
500 to about 1000 angstroms.

4. A heater chip for an inkjet printhead, comprising:
  - 10 a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
    - a conductor layer on the resistor layer defining a heater length; and
    - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein
  - 15 the heater length multiplied by the heater width is in a range from about 200 to about 250 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.
5. A heater chip for an inkjet printhead, comprising:
  - 20 a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
    - a conductor layer on the resistor layer defining a heater length; and
    - an overcoat layer having an overcoat thickness on the resistor layer, the
  - 25 overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 250 to about 300 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.

6. A heater chip for an inkjet printhead, comprising:
  - a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
  - a conductor layer on the resistor layer defining a heater length; and
  - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 300 to 10 about 350 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.
7. A heater chip for an inkjet printhead, comprising:
  - a substrate;
  - 15 a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
  - a conductor layer on the resistor layer defining a heater length; and
  - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein 20 the heater length multiplied by the heater width is in a range from about 350 to less than about 400 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.
8. A heater chip for an inkjet printhead, comprising:
  - 25 a substrate;
  - a resistor layer on the substrate having a resistor thickness and a resistor width defining a heater width;
  - a conductor layer on the resistor layer defining a heater length; and

- an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 5 500 to about 1000 angstroms wherein an energy to emit an ink drop from the heater chip during use is in a range from about 0.007 to about 0.14 microjoules.
9. A heater chip for an inkjet printhead, comprising:  
a substrate having a plurality of thin film layers thereon; and  
10 a plurality of heaters defined by some of the plurality of thin film layers, at least one of the plurality of heaters having a heater area in a range from about 50 to about 250 micrometers squared and a heater thickness in a range from about 500 to about 6000 angstroms.
- 15 10. The heater chip of claim 9, wherein an energy to emit a drop of ink from the at least one of the plurality of heaters during use is in a range from about 0.007 to about 0.6 microjoules.
11. A heater chip for an inkjet printhead, comprising:  
20 a substrate having a plurality of thin film layers thereon; and  
a plurality of heaters defined by some of the plurality of thin film layers, each heater of said plurality of heaters having a heater thickness and heater area wherein the heater area is less than about 250 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms.  
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12. The heater chip of claim 11, wherein an energy to emit a drop of ink from said each heater during use is in a range from about 0.007 to about 0.6 microjoules.

13. The heater chip of claim 11, wherein the plurality of thin film layers include a resistor layer and a conductor layer on the resistor layer.
- 5      14. The heater chip of claim 13, wherein the conductor layer has an anode and a cathode, a distance between the anode and cathode on a surface of the resistor layer defining a heater length of said heater area.
- 10     15. The heater chip of claim 11, wherein the plurality of thin film layers include a resistor layer and an overcoat layer on the resistor layer.
16. The heater chip of claim 15, wherein a thickness of the resistor layer and a thickness of the overcoat layer define said heater thickness.
- 15     17. The heater chip of claim 15, wherein the overcoat layer further includes a passivation layer and a cavitation layer.
18. The heater chip of claim 15, wherein the overcoat layer further includes one of a silicon nitride, a silicon carbide and a diamond like carbon layer.
- 20     19. The heater chip of claim 11, wherein the plurality of thin film layers include a resistor layer.
- 25     20. The heater chip of claim 19, wherein a width of the resistor layer defines a heater width of said heater area.